

Application Serial No. 10/306,417
Amendment Dated February 16, 2004
Reply to Office Action of November 19, 2003

REMARKS/ARGUMENTS

Reconsideration of the above-identified patent application is respectfully requested in view of the following remarks. Claims 1 - 27 remain in the application.

The claims of the instant application are drawn to a method for utilizing a miniature, unmanned, remotely guided aircraft weighing less than fifty-five pounds to obtain aerial images of an agricultural field. Aircraft meeting this weight requirement are currently exempt from many regulations governing aircraft heavier than fifty-five pounds. In addition, the use of such an aircraft provides numerous other logistical and operational advantages enumerated in the instant specification.

Claims 1 - 7, 12 - 14, 17, 18, 22 - 27 were rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. United States Patent No. 6,529,615 for METHOD OF DETERMINING AND TREATING THE HEALTH OF A CROP, issued March 4, 2003 to Larry I. Hendrickson et al. in view of United States Patent No. 4,172,632 for METHOD AND APPARATUS FOR PRODUCING THREE-DIMENSIONAL SHADOW IMAGES, issued October 30, 1979 to Lawrence Holmes, Jr.

HENDRICKSON et al. disclose a system for utilizing imagery acquired from a variety of different platforms including "from a land vehicle, airplane, helicopter, pilotless drone, satellite, etc." (Column 11, lines 26 - 28). Nowhere do HENDRICKSON et al. teach or suggest the specifics of Applicant's aerial image acquisition platform, specifically a miniature, unmanned aircraft weighing less than fifty-five pounds. In fact, Examiner Hernandez clearly states that "HENDRICKSON et al. do NOT teach the specifics of Applicant's miniature aircraft weighing less than fifty-five pounds, and the image acquisition apparatus, synthetic aperture radar," etc. (page 3, lines 5 - 7). However, the Examiner goes on to state that "Holmes teaches the use of a miniature aircraft (column 53, lines 33 - 35)." Applicant respectfully disagrees. HOLMES, Jr. teaches a MODEL aircraft used within an imaging system to provide a sophisticated, realistic image to a viewer. Nowhere is there a specific teaching concerning the weight of the model aircraft. The HOLMES, Jr. model aircraft is never flown nor does it participate in any kind of data acquisition activity. Any perceived motion of the model aircraft is induced by external actuators acting thereupon such that a projected shadow or other image of the model

assumes a realism when viewed by a viewer. There would be no motivation to combine the teaching of HOLMES Jr. with that of HENDRICKSON et al. In fact, Applicant believes HOLMES Jr. to be completely non-analogous art. A person skilled in the design and flying of a miniature, unmanned aircraft such as that taught by Applicant would and should not be expected by be skilled the complex art of 3-D image production, especially 3-D shadows, as is taught by HOLMES, Jr. Applicant believes that the combining of HENDRICKSON et al. and HOLMES JR. is clearly improper.

As admitted by Examiner Hernandez, HENDRICKSON et al. by itself fails to obviate Applicant's claimed aircraft. HOLMES, Jr. fails to teach an under fifty-five pound aircraft capable of flying or gathering aerial imagery as does Applicant's aircraft, but rather teaches a non-operative model aircraft used solely for image production. The combining of HENDRICKSON et al. with HOLMES, Jr. is deemed improper by the Applicant. Consequently, Applicant respectfully traverses the rejection of claims 1 - 7, 12 - 14, 17, 18, 22 - 27 under 35 U.S.C. §103(a) as being unpatentable over HENDRICKSON et al. in view of HOLMES.

Claims 8 - 11, 15, 16, and 19 - 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over HENDRICKSON et al. in view of United States Patent No. 5,467,271 for MAPPING AND ANALYSIS SYSTEM FOR PRECISION FARMING APPLICATIONS, issued November 14, 1995 to Robert J. Abel et al. ABEL et al. teach in great detail a method for mapping and analyzing images but are silent regarding any detail of an airborne platform for gathering useful aerial imagery.

ABEL et al. address issues of controlling image gathering from an airborne station 14 (incorrectly identified as reference number 18 at column 7, lines 14 and 17) for image gathering. An air-base (or air-borne) station is used for image gathering: "Mapping and analysis system 10 includes an air-based station 14 (further illustrated in FIG. 2) carried by an aircraft 16 and a ground-based station 18. While aircraft 16 is shown as an airplane, other aircraft, satellites, etc. are contemplated. Air-based station 14 includes image sensing devices 22 for measuring spatial and spectral resolution data of a farming field 24 under study (Column 1, lines 33 - 39)." Certainly, the ABEL et al. system does not specifically teach a miniature, unmanned aircraft as does Applicant. In addition, while the term "predetermined flight path" appears thrice in the ABEL et al. specification, there is no enablement provided therein. There is certainly

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no teaching in ABLE et al. which suggests Applicant's unique air frame. By providing such broad teaching as "other aircraft, satellites, etc., Abel et al. actually teach away from Applicant's very specific, under fifty-five pound aircraft. There would certainly be no motivation whatsoever to try and package the complex system of ABEL et al. into an under fifty-five pound aircraft. Consequently, adding the teaching of ABEL et al. to that of HENDRICKSON et al. still fails to suggest and thus obviate Applicant's unique airborne platform (i.e., the under fifty-five pound, remotely guided miniature aircraft).

Specifically, claims 8 and 15 claim the added limitation of the microprocessor being "disposed to control the automated flight control apparatus to achieve a predetermined flight path". HENDRICKSON et al. are silent regarding automated flight control and ABEL et al. offer no enablement other than suggesting the possibility of such flight path control. Because Applicants described and claimed air frame is already believed to be patentably distinct from the teaching of HENDRICKSON et al., the addition of the limitation recited in claims 8 and 15 is merely an additional limitation to an already allowable claim.

Regarding claims 9, 10, 11, 16, and 19 - 21, the respective recitations of GPS, using environmental data to control the aircraft, and choosing the area to be overflown, are not being claimed in a stand alone fashion. Of course these are all "old". However, the combination of these limitations with the unique, non-obvious subject matter of Applicant's independent claims merely provides additional limitations to those allowable base claims.

Applicant believes for at least the reasons stated hereinabove, that the instant claims are clearly patentable over HENDRICKSON et al., alone, or in combination with ABEL et al. and/or HOLMES, Jr.

In view of the foregoing amendments and remarks, Applicant respectfully requests that claims 1 - 27 be allowed and that the application be passed to issue.

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Respectfully submitted,
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A handwritten signature in black ink, appearing to read 'D. L. Banner', with a horizontal line extending from the end of the signature.

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